ble factors. T suppressors cells stop the process when it reaches its peak effect and thereby maintain homeostasis.

Most recent studies have shown that the Sezary cell is a T helper cell. It has been found that Sezary cells increase immunoglobulin production by 6-fold to 30-fold when added to normal B cells. No suppression was observed at high T cell to B cell ratio. It was concluded, therefore, that neoplastic Sezary cells originated from a subset of T cells programmed exclusively for T helper activity. These findings have been more recently confirmed.

Such studies are significant and important to practicing physicians. They have opened a new avenue of research for treatment of mycosis fungoides and the Sezary syndrome. In both instances, the prognosis is not good.

These new studies would direct attention toward more sophisticated therapeutic endeavors. Examples include generation of specific suppressor cells to offset the helper cells, shifting of helper cells from specific to nonspecific function, and production of agents that will be aimed at antagonizing the subset of T helper cells, its products or its matched B cell.

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A Capsule on Zinc

DEFICIENCY OF ZINC affects several systems of the human body, including the skin. Patients with acrodermatitis enteropathica have low serum levels of zinc and respond dramatically to supplemental zinc. Cutaneous lesions have been described in patients receiving total parenteral nutrition that respond to zinc administration. Several reports have recently appeared in the literature claiming beneficial results from zinc therapy in acne vulgaris, wound and leg ulcer healing, recurrent oral ulcer, taste and smell dysfunction, dark adaptation and furunculosis.

The adult body contains about 2 grams of zinc, 20 percent of which resides in the skin and hair. Normal levels of zinc are 70 to 125 μg per dl in the serum and 300 to 700 μg per 24 hours in urine. Zinc is absorbed primarily from the small intestine. Rich sources are seafoods, red meats and whole grain cereals. Poor suppliers include sugars, nonleafy vegetables and citrus fruits. It is mostly bound to albumin in the serum. It is excreted in the urine and feces.

The functions of zinc have been studied in animals fed zinc deficient diets and in clinical situations in which reduced serum zinc levels have been detected. At the cellular level, it seems to be an integral constituent of several enzymes and affects the plasma membrane stability of protein, lipid and carbohydrate metabolism and and DNA synthesis.

Decreased levels of zinc are associated with growth retardation, inadequate brain development, lethargy, irritability, tremor, cerebral ataxia and poor skeletal development. Abnormalities of spermatogenesis, parturition, lactation and other gonadal functions, taste, smell and wound healing frequently occur in zinc deficiency. An important role has been ascribed to zinc in the function of various aspects of the immune system in man. The World Health Organization recommends that the daily dietary intake of zinc should be 10 to 15 mg for adults and 5 mg for infants. These requirements may be altered in physiologic states such as pregnancy and lactation and in pathologic states such as inflammatory bowel disease, burns, cirrhosis of liver, chronic bacterial and parasitic infections, cystic fibrosis and in patients being treated with long-term hemodialysis, chelating agents and total parenteral nutrition.

Zinc preparations are frequently sold in drug stores and health food stores. The amount of zinc present should be expressed as the elemental amount, for example, 5 mg of zinc sulphate is approximately 1 mg of elemental zinc. The dose in different clinical indications varies. In acrodermatitis enteropathica, 1 mg per kg of body weight per day is recommended. The margin of safety in the therapeutic dose is large, but toxic effects can occur even at low doses. Common side effects are gastrointestinal symptoms. Overdose is asso-

ciated with fever, malaise, dizziness, headaches, anemia and even death. WILLIAM ABRAMOVITS, MD

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Current Antifungal Therapy

CUTANEOUS FUNGAL INFECTIONS are frequently seen in an office based practice. They are mainly treated by topical agents.

Tinea versicolor, caused by Pityrosporum orbiculare (Malassezia furfur), is often treated with 2½ percent selenium sulfide suspension applied for ten minutes a day or overnight initially and less frequently subsequently. Acrisorcin (Akrinol) sodium thiosulfate is also effective.

Superficial mycoses caused most frequently by Trichophyton rubrum, Trichophyton mentagrophytes or Epidermophyton floccosum include tinea pedis, cruris or corporis. Several topical agents may be used successfully. Tolnaftate (Aftate, Tinactin) is a colorless, odorless compound available as a cream, liquid or powder. It has a cure rate of 73 percent to 93 percent and is available over the counter. Haloprogin (Halotex) is available as a 1 percent solution or cream, and applied daily gives 68 percent to 92 percent cure rates. Clotrimazole (Lotrimin) is an imidazole with a wide range of activity against dermatophytes, yeasts, filamentous and dimorphic fungi. Available as a 1 percent solution or cream, it gives a 59 percent to 85 percent cure rate. Miconazole (MicaTin) is also an imidazole and is effective against dermatophytes, yeast and Gram-positive bacteria and gives a 75 percent to 100 percent cure rate. It also has been found effective in the treatment of aspergillosis, coccidioidomycosis and cryptococcal meningitis. Haloprogin, clotrimazole and miconazole are available on prescription only.

Underlying factors which predispose to dermatophyte infection should be corrected. They include excessive perspiration and retention of sweat by tight fitting garments and shoes; obesity, and diabetes mellitus.

Oral administration of griseofulvin should be reserved for patients unresponsive to topical therapy. In its new form, the active ingredient is dispersed as ultramicrosized particles in a polyethylene glycol vehicle (Gris-PEG, Fulvicin-UIF). Since it does not require fat for absorption, it can be taken without meals. The enhanced absorption of the compound usually requires a dose of only 125 mg twice a day. Higher doses may be needed for recalcitrant and refractory infections. WILLIAM V. R. SHELLOW, MD

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Future of Antiandrogens in Acne

IT IS WELL RECOGNIZED that the responsiveness of the skin to androgens is associated with many common disorders such as hirsutism, male pattern baldness and acne vulgaris. Although alterations in the keratinization and inflammatory reaction in the follicular duct play a role in the pathogenesis of acne, there is fairly good evidence that lipogenesis in the sebaceous gland is necessary for the disease to occur. The primary events in sebaceous gland lipogenesis appear to be controlled by androgens.

Thus, theoretically it would be reasonable to treat acne with topical agents that are antiandrogen in nature. Cyproterone acetate (CPA) has been used in Europe. Its mechanism of action is competition for the androgen receptor on the sebaceous gland cell. While Cunliffe and Pye have reported no success in its topical use, Winkler has reported decreased sebum secretion of sequential use. CPA with ethynol estradiol given orally results in distinct improvement of acne, but no reports on topical use are available. Flutamide is a similar compound which is nonsteroidal and is effective in animal studies, but has not been tried in humans.

Progesterone competitively blocks the conversion of testosterone to dihydrotestosterone, when applied to male pubic skin reduces 5-reductase activity, but does not reduce sebum output. Estrogen in large nonphysiologic doses reduces seba-